ENVIRONMENTAL Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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Delineating Wellhead Protection Areas

The purpose of wellhead protection is to prevent the contamination of groundwater used for drinking water. A *wellhead protection area* (WHPA) is the area surrounding a public water supply well from which water and contaminants are likely to reach the well. DES recognizes WHPAs for community water systems and for non-transient, non-community water systems, but not for transient systems.

Delineation is the process of identifying the wellhead protection area. There are several methods for delineating WHPAs for public water supply wells. The methods range from simple and inexpensive to complex and costly. The choice of delineation method depends on the objective of the local wellhead protection program, as indicated in Table 1.

For local wellhead protection programs based on managing potential contamination sources through education and inspection, DES has prepared delineations using existing hydrogeologic information. If the local wellhead protection program includes extensive land use restrictions, a more sophisticated, site-specific hydrogeologic investigation may be warranted. Grant funds may be available for refining delineations. Information about delineation methods follows Table 1.

Table 1
Local Objectives and Appropriate WHPA Delineation Type

Local Objective	Appropriate WHPA Delineation Type
Wellhead Protection Program including inspection for Best Management Practices	Bedrock wells: 1300 - 4000 ft. Radius based on withdrawal volume **or** Overburden wells: Based on existing data
Qualify for DES-Approved Reclassification	
Qualify for Chemical Monitoring Waivers	
Siting New Small (<57,600 gallons/day) Bedrock Wells	
Wellhead Protection Program including inspection for Best Management Practices	Site-Specific Hydrogeologic Investigation
Protection Programs with Extensive Land Use Restrictions	
Siting New Community Overburden Wells and New Large	

(≥57,600 gallons/day) Community Bedrock Wells	

Delineations Based on Existing Information

Delineations based on existing information about the well and aquifer represent an approximation of the area from beneath which groundwater is drawn into the well. These delineations allow the local entity (water supplier, municipality, etc.) to focus limited financial resources in an area which is likely to provide effective protection without the need to expend significant resources on a more precise delineation. DES approval of a delineation must be obtained before it can be used with any DES program. If a wellhead protection program that relies on purchase of land or the prohibition of land uses is planned, then a more precise delineation may be appropriate. Table 2 indicates appropriate delineation method based on aquifer material and conditions.

Table 2
Selection of Delineation Methods
Based on Existing Information

Aquifer Material	Aquifer Conditions	Phase I Delineation Method
Bedrock	Any	Fixed radius based on volume
Unconsolidated (Overburden)	Water table (unconfined) aquifer	Uniform flow equation using available information with 4,000 ft. maximum
	Artesian (confined) aquifer	Fixed radius based on volume

Delineations Based on Pump Tests or Other New Site-Specific Information

The most sophisticated WHPA delineation method is based on field observations of aquifer characteristics during a detailed pumping test, coupled with calculations designed to predict long-term aquifer conditions. This type of delineation requires a qualified hydrogeologist and is appropriate when siting large new community wells or new community overburden wells or when a protection program is planned that emphasizes extensive land use restrictions. For more information about delineations, contact the DES Wellhead Protection Program at (603) 271-2947.

For Additional Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.state.nh.us or visit our website at www.des.nh.gov/dwgb. All of the bureau's fact sheets are on-line at www.des.nh.gov/dwg.htm.

Note: This fact sheet is accurate as of January 2007. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.